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IS 13902 (Part 2) : 1993
ISO 3189-2 : 1985
(Reaffirmed 2002)

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Indian Standard

SOCKETS FOR WIRE ROPES FOR GENERAL PURPOSES

PART 2 SPECIAL REQUIREMENTS FOR SOCKETS PRODUCED BY FORGING. OR MACHINED FROM THE SOLID

UDC 621·827·174 : 677·721

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

November 1993 **Price Group 1**

NATIONAL FOREWORD

This Indian Standard which is identical to ISO 3189/2 : 1985 'Sockets for wire ropes for general purposes — Part 2 Special requirements for sockets produced by forging or machined from the solid' issued by the International Organization for Standardization (ISO), was adopted by the Bureau of Indian Standards on the recommendation of the Wire Ropes and Wire Products Sectional Committee, (HMD 10) and approval of the Heavy Mechanical Engineering Division Council.

This standard has been issued in several parts. The other parts of this Indian Standard are:

IS 13902 (Part 1)	Sockets for wire ropes for general purposes : Part 1 General characteristics and conditions of acceptance
IS 13902 (Part 3)	Sockets for wire ropes for general purposes : Part 3 Special requirements for sockets produced by casting

The requirements of drop forged sockets for wire ropes general engineering purposes are presently covered in IS 2485 : 1979. As this series of the standard has been brought out this shall supersede IS 2485 : 1979.

The text of ISO standard has been approved for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a full point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their place are listed below along with their degree of equivalence for the editions indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 261 : 1973	IS 4218 (Part 2) : 1972 ISO Metric screw threads : Part 2 Diameter pitch combination (*first revision*)	Technically Equivalent
ISO 965/1 : 1980	IS 4218 (Part 4) : 1976 ISO Metric screw threads : Part 4 Tolerancing system (*first revision*)	Technically Equivalent
ISO 965/2 : 1980	IS 4218 (Part 6) : 1978 ISO Metric screw threads : Part 6 Limits of sizes for commercial bolts and nuts (diameter range 1 to 52 mm) (*first revision*)	Technically Equivalent
ISO 965/3 : 1980	IS 4218 (Part 5) : 1979 ISO Metric screw threads : Part 5 Tolerances (*first revision*)	Technically Equivalent
ISO 3189/1 : 1985	IS 13902 (Part 1) : 1993 Sockets for wire ropes for general purposes : Part 1 General characteristics and conditions of acceptance	Identical

The concerned technical committee has reviewed the provisions of ISO 643 referred in this adopted standard and has decided that it is acceptable for use in conjunction with this standard.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*'). The number of significant places retained in the rounded off value shall be the same as that of the specified value in this standard.

Indian Standard

SOCKETS FOR WIRE ROPES FOR GENERAL PURPOSES

PART 2 SPECIAL REQUIREMENTS FOR SOCKETS PRODUCED BY FORGING OR MACHINED FROM THE SOLID

1 Scope and field of application

This part of ISO 3189 specifies the special requirements for materials and method of manufacture of sockets produced by forging or by machining from the solid. The general characteristics, critical dimensions, prototype test requirements, general quality control and conditions of acceptance are dealt with in ISO 3189/1.

2 References

ISO 261, *ISO general purpose metric screw threads — General plan.*

ISO 643, *Steels — Micrographic determination of the ferritic or austenitic grain size.*

ISO 965, *ISO general purpose metric screw threads — Tolerances.*

ISO 3189/1, *Sockets for wire ropes for general purposes — Part 1: General characteristics and conditions of acceptance.*

3 General conditions of acceptance

Sockets shall comply with the requirements of ISO 3189/1 as well as with those in this part of ISO 3189.

4 Materials and heat treatment

4.1 Quality of material

The steel used shall be produced by the open hearth or electric process, or by oxygen blown process.

It shall be fully killed and, when heat-treated, be capable of producing in the finished socket the mechanical properties required by this specification.

In its finished state as supplied to the socket-maker, the steel shall meet the following requirements, as determined by check analysis on the finished socket.

Its sulfur and phosphorus content shall be restricted as follows:

	Cast analysis	**Check analysis**
Sulfur, max.	0,045 %	0,050 %
Phosphorus, max.	0,040 %	0,045 %

The steel shall be made in conformity with a suitable deoxidation practice to obtain an austenitic grain size of 5 or finer, when tested in accordance with ISO 643.

This could be achieved, for example, by ensuring that it contains sufficient aluminium, or an equivalent element, to permit the manufacture of sockets stabilized against strain age embrittlement during service; a minimum value of 0,020 % metallic aluminium is given for guidance.

Within the above limitations, it is the responsibility of the socket-maker to select steel so that the finished socket, suitably heat-treated, meets the mechanical properties specified in this part of ISO 3189.

4.2 Heat treatment

Sockets shall, after forging or gas cutting, be subjected to a suitable heat treatment.

5 Socket manufacture

Sockets complying with this part of ISO 3189 shall be (open) type I or (closed) type II, and shall conform to the critical dimensions specified in ISO 3189/1 (see table 1 and figures 1 and 2).

5.1 Bodies

Bodies for this type of socket shall be produced in one piece by drop forging, hand forging or machining from the solid; the body shall be neatly and cleanly made. All flashes or fins produced in manufacture shall be removed. All sharp edges shall be suitably radiused. Welding shall not be permitted.

For bodies machined from the solid, machine gas cutting may be used to assist in rough shaping. An adequate excess of material shall be left after gas cutting for the removal of surface defects by machining or, in the case of the edges of the lugs and the continued edges around the top of the basket, by grinding.

The pin holes shall be drilled or otherwise machined in one operation to ensure, as far as is practicable, that the centreline of the holes is at right angles to the centreline of the socket basket.

5.2 Pins

The pins shall be forged, forged and machined, or machined from the bar, and may be threaded or plain, according to the purchaser's requirements.

The length of the plain portion of a threaded type pin shall be such that the nut will tighten against the shoulder of the pin and not against the outside face of the socket lug.

The threads on pins and associated nuts shall comply with the coarse pitch series, specified in ISO 261, and tolerance class 6g, specified in ISO 965.

A suitable safety device, such as a split cotter pin, shall be provided to prevent nuts accidentally becoming displaced.

6 Special quality control for forged sockets and sockets machined from the solid

The general quality control requirements specified in ISO 3189/1 shall be met. In addition, if requested by the purchaser, the following tests shall be carried out.

6.1 Magnetic flaw or dye penetrant method

If requested by the purchaser, each socket shall be subjected to an approved method of particle crack detection. All external and internal surfaces shall be examined, and cracks, rips or other detrimental defects shall not be accepted.

6.2 Radiographic tests

If requested by the purchaser, radiographic tests shall be carried out. The number of samples shall be in accordance with the following table.

Lot or batch size (Number of sockets)	**Sample size** (Number of sockets)
2 to 8	2
9 to 15	3
16 to 25	5
26 to 50	8
51 to 90	13
91 to 150	20
151 to 280	32
281 to 500	50
501 to 1 200	80
1 201 to 3 200	125
3 201 to 10 000	200

Acceptable levels of defect should be agreed between the purchaser and the manufacturer.

6.3 Ultrasonic tests

If requested by the purchaser as an alternative to the magnetic flaw or dye penetrant method and the radiographic test, the sockets shall be subjected to ultrasonic tests. In such cases, the test method and the acceptable levels of defect shall be the subject of agreement between the purchaser and the manufacturer.

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The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Handbook' and 'Standards Monthly Additions'. Comments on this Indian Standard may be sent to BIS giving the following reference:

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